

REMARKS

Status of the Application

Claims 1-19 are all the claims pending in the Application. Claims 1-19 have been rejected.

Provisional Double Patenting Rejections

The Examiner has again provisionally rejected Claim 1 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over: (1) claims 1-8 of copending application no. 09/898,060; (2) claims 1-9 of copending application no. 09/833,941; (3) claims 1-22 of copending application no. 09/878,268; and (4) claims 1-38 of copending application no. 10/225,532.

Applicants respectfully defer comments on these rejections until one or more of the Applications issues into a patent and the rejections are no longer provisional in nature.

Claim Rejection

The Examiner has rejected, under 35 U.S.C. § 103(a): (1) claims 1-8 and 12-14 as being unpatentable over Masuda et al. (US 6,340,999; hereinafter “Masuda”); (2) claims 9-11 and 15-17 as being unpatentable over Masuda in view of Yano et al. (JP 11-326903; hereinafter “Yano”); and (3) claims 18 and 19 as being unpatentable over Masuda in view of Nemoto et al. (US 6,456,344; hereinafter “Nemoto”). These rejections are respectfully traversed.

Independent Claim 1 - The Applied Reference

Independent claim 1 is rejected only in view of Masuda. Masuda discloses (in FIG. 10 cited by the Examiner) a reflective type liquid crystal display 5, consisting of glass substrate 5a, liquid crystal layer 6, reflector 7, and glass substrate 5b. Masuda additionally discloses a *separate* front light 1 consisting of a light guide 3, low refractive resin layer 10a, and a polarization selecting section 4. Front light 1 is not part of reflective type liquid crystal display 5.

Masuda discloses that the arrangement shown in FIG. 10 is superior to the prior art device shown in FIG. 16, because bright spots are reduced (see col. 6, lines 1-20) as light from the light guide 3 must first pass through the polarization selecting section 4 (which reduces the light incident upon glass substrate 5a).

Accordingly, Masuda is specifically directed towards systems that utilize *separate* front lights 1 and reflective type liquid crystal displays 5. In fact, Masuda even indicates that devices that utilize attached liquid crystal cells and light guides do not provide polarizing plates or phase plates, as required by the devices of Masuda (see col. 3, line 61 - col. 4, line 4).

Independent Claim 1 - The Examiner's Position

Nevertheless, the Examiner takes the position that Masuda discloses all of the features recited in independent claim 1. Specifically, the Examiner compares reflector 7, glass substrate 5b, liquid crystal layer 6, low refractive resin layer 10a and light source 2 to the recited “reflector,” “back-side substrate,” “liquid crystal,” “low refractive index transparent layer” and “illuminator,” respectively. Further, the examiner curiously seems to compare a single feature,

light guide 3, to *both* the recited “visual side substrate” and the “optical path control layer,” which are separately recited features of independent claim 1.

Independent Claim 1 - Applicant’s Traversal A - Masuda Fails To Teach Or Suggest That The Recited “Optical Path Control Layer” Is Arranged “On An Outer Side Of Said Visual Side Substrate.”

Applicants respectfully submit that Masuda fails to teach or suggest *at least* a “reflection type liquid-crystal display panel including a liquid-crystal cell and a reflector, said liquid-crystal cell having a visual-side substrate” and an “optical path control layer having a repetitive structure of optical path changing slopes on an outer side of said visual side substrate,” as recited in independent claim 1.

Specifically, as discussed above, Masuda discloses a device utilizing a *separate* front light 1 and reflective type liquid crystal display device 5. Thus, Applicants respectfully submit that the only portion of Masuda that could reasonably be read as the “reflection type liquid-crystal display panel” is reflective type liquid crystal display 5. Applicants respectfully submit that the Examiner cannot arbitrarily include separate features outside of reflective type liquid crystal display 5 without some teaching or suggestion to do so. Here, as discussed above, not only is there no teaching or suggestion to combine the front light 1 and the reflective type liquid crystal display 5, Masuda specifically indicates that such a combined system would not utilize the light control section which are quite important to Masuda.

In view of the above, since the only portion of Masuda that could reasonably be read as the “reflection type liquid-crystal display panel” is reflective type liquid crystal display 5, the

recited “visual-side substrate” included in the “reflection type liquid-crystal display panel” must be within the reflective type liquid crystal display 5. Thus, Applicants respectfully submit that the only portion of Masuda that could reasonably be read as the recited “visual-side substrate” is glass substrate 5a.

Taking the above into account, and as the only portion of Masuda that could reasonably be read as the recited “optical path control layer” is light guide 3, Applicants respectfully submit that, although light guide 3 is located to *one side* of glass substrate 5a, it is not located “on” glass substrate 5a (as shown by the gap between these structures in FIG. 10 of Masuda). Thus, Masuda fails to teach or suggest all of the features of claim 1.

Independent Claim 1 - Applicant's Traversal B - Masuda Fails To Teach Or Suggest All Of The Features Of The Recited “Visual Side Substrate”

Applicants respectfully submit that Masuda fails to teach or suggest *at least* a “visual-side substrate including a transparent substrate, a low-refractive-index transparent layer lower in refractive index than the transparent substrate, and a transparent electrode,” as recited in independent claim 1.

As discussed above, the only portion of Masuda that could reasonably be read as the “visual-side substrate” included in the “reflection type liquid-crystal display panel” is glass substrate 5a. However, Masuda fails to also teach or suggest “a low-refractive-index transparent layer lower in refractive index than the transparent substrate” included in the “visual-side substrate,” as recited in claim 1. Masuda only discloses glass substrate 5a, and is silent regarding any component parts thereof.

Further, the portion in Masuda compared by the Examiner to the “low-refractive-index transparent layer,” low refractive resin layer 10a, is located in the front light 1, *not* in the reflective type liquid crystal display device 5, and nowhere near the glass substrate 5a.

Still further, Masuda only discloses refractive indexes for light guide 3 (1.49), low refractive index resin layer 10a (1.38), and polarization selecting section 4 (1.5). Masuda fails to teach or suggest any particular refractive indexes for any of the features in refractive type liquid crystal display 5.

Thus, even if it were somehow possible to modify Masuda so that the front light 1 and the reflective type liquid crystal display 5 were combined, the resultant combination would still not teach or suggest the features of claim 1, since the refractive index of glass substrate 5a is undefined.

In other words, even if low refractive index resin layer 10a could be considered to be part of reflective type liquid crystal display 5, Masuda fails to teach or suggest that the refractive index of glass substrate 5 (the only portion that can reasonably be compared to the recited “transparent substrate”) is any different from low refractive index resin layer 10a.

Independent Claim 1 - Applicant's Traversal C - Masuda Fails To Teach Or Suggest The Recited Angular Relationships

Lastly, Applicants again respectfully submit that Masuda fails to teach or suggest at least “an optical path control layer having a repetitive structure of optical path changing slopes on an outer side of said visual-side substrate and being higher in refractive index than said low-refractive-index transparent layer, each of said optical path changing slopes being inclined at an

inclination angle in a range of from 35 to 48 degrees with respect to a reference plane of said visual-side substrate,” as recited in independent claim 1.

The Examiner again argues that the optical path changing slopes are inclined 35-48°, “as graphically illustrated by the light path arrow in the upper portion of Figure 10”. In response to Applicant’s previous arguments (see July 10, 2003 Amendment) that drawing figures are not dispositive of the specific angles, the Examiner concedes that “drawings that are not to scale are generally of little value when making determinations as to dimensions.” Applicants agree.

However, the Examiner now alleges that the drawings “tend to be quite reliable for ray traces, because the drawing must convey the path of the ray” and that “the drawings of Masuda clearly indicates a ray path that makes a turn of about 90° which would be achieved with slopes of 35-48° (a practice well known in the art at the time the claimed invention was made)” (see Office Action, bottom of page 16).

Applicants respectfully disagree with the Examiner’s premise. The Examiner’s concession that “drawings that are not to scale are of little value when making determinations as to dimensions” is correct, and Applicants respectfully submit that angular measurements are “dimensions” just as the other features of the drawings are.

Further, a drawing that is not to scale cannot provide ray traces that are to scale. As the relative dimensions of the drawing change, the ray traces will also change. Further, although the Examiner indicates that unscaled ray traces are somehow more accurate than other dimensions in unscaled drawings, he cites no case law or MPEP section to support this assertion.

Still further, although the Examiner indicates that reverse engineering the alleged slopes of Masuda based on the unscaled ray traces would have somehow resulted in the determination of a slope within the claimed range, he cites no reference that discloses such a process. Accordingly, Applicants respectfully submit that the Examiner's rejection is unsupported.

Even further, the Examiner's entire premise that the slope can easily be determined since the ray traces make a turn of approximately 90° is flawed, as each of the rays shown in FIG. 10 of Masuda are reflected twice, first off the top surface of light guide 3, and then off the stepped surface (the alleged slope).

In view of the above, Applicants respectfully submit that the claimed range is simply not disclosed by Masuda. Further, as the claimed range provides unexpectedly better results (see detailed discussion throughout the Application), it cannot reasonably be argued that the claimed range is suggested by the broad disclosure of Masuda.

Thus, Applicants respectfully submit that independent claim 1 is patentable over the applied reference. Further, Applicants respectfully submit that rejected dependent claims 2-19 are allowable, *at least* by virtue of their dependency.

Dependent Claims

Additionally, Applicants respectfully submit that many of the dependent claims 2-19 are separately patentable over the applied references.

Regarding claim 2, Applicants respectfully submit that Masuda fails to teach or suggest that the "low-refractive-index transparent layer is disposed between said transparent substrate

and said transparent electrode, and there is a difference in refractive index by 0.05 or more between said low-refractive-index transparent layer and said transparent substrate.”

As discussed above, the only portion of Masuda that could reasonably be read as the “visual-side substrate” is glass substrate 5a, and Masuda fails to teach or suggest a separate “transparent substrate” within the “visual side substrate,” as recited in claim 1.

Further, Masuda fails to teach or suggest any specific “transparent electrode,” or that the “low-refractive-index transparent layer” is between the “transparent substrate” and “transparent electrode.”

In fact, the Examiner’s allegation that low refractive index resin layer 10a is somehow equivalent to the “low-refractive-index transparent layer” is clearly incorrect in view of claim 2, as there is no teaching or suggestion that low refractive index resin layer 10a is between any “transparent substrate” and “transparent electrode.”

Regarding claim 4, Applicants respectfully submit that Masuda, at least as the Examiner is currently construing it, cannot teach or suggest that the “liquid-crystal display panel further includes one or two polarizers disposed on one of or each of opposite sides of said liquid-crystal cell.”

Specifically, if the Examiner somehow construes light guide 3 to be part of the liquid crystal display panel, then Masuda must disclose a polarizer arranged on at least one side of the liquid crystal cell. However, Masuda only discloses polarization selecting section 4 *below* light

guide 3, *i.e.*, it is not on a side of the liquid crystal cell (at least as the Examiner seems to be interpreting Masuda).

- Thus, Applicants respectfully submit that claim 4 is separately patentable over the applied reference.

Other Rejections

Regarding the remaining applied references, Yano and Nemoto, Applicants respectfully submit that these references fail to teach or suggest at least the features discussed above that are missing from Masuda.

Conclusion

In view of the foregoing, it is respectfully submitted that claims 1-19 are allowable. Thus, it is respectfully submitted that the application now is in condition for allowance with all of the claims 1-19.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment Under 37 C.F.R. § 1.116
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Attorney Docket # Q64435

Please charge any fees which may be required to maintain the pendency of this application, except for the Issue Fee, to our Deposit Account No. 19-4880.

Respectfully submitted,

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